REMARKS

Claims 35 and 75 are amended. Claims 35-39, 41-48 and 75 are pending in the application.

Claim 75 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner indicates that it is unclear as to whether the insulating material and the contact opening recited in claim 75 are those as defined in claim 35 or additional features. As amended, independent claim 75 no longer recites an insulative material and contact opening. Accordingly, applicant respectfully requests withdrawal of the § 112 rejection of claim 75 in the Examiner's next action.

Claims 35-39, 41-48 and 75 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over a combination of Besser, U.S. Patent No. 5,582,881; Shan, U.S. Patent No. 6,140,228; Marieb, U.S. Patent No. 5,909,635; and Colgan, U.S. Patent No. 5,925,933. The Examiner is reminded by direction to MPEP § 2143 that a proper obviousness rejection has the following three requirements: 1) there must be some suggestion or motivation to modify or combine reference teachings; 2) there must be a reasonable expectation of success; and 3) the combined references must teach or suggest all of the claim limitations. Each of these three factors must be shown in order to establish a *prima facie* case of obviousness, the burden of which is upon the Examiner. Claims 35-39, 41-48 and 75 are allowable over Besser, Shan, Marieb and Colgan for at least the reason that the references, individually or as combined, fail to disclose or suggest each and every limitation in any of those claims.

As amended, independent claim 35 recites depositing a first layer comprising

elemental aluminum or an aluminum alloy over an insulating layer and filling an opening within the insulating layer, forming a second layer comprising an alloy of titanium and aluminum from the first layer and depositing a third layer comprising titanium nitride on the second layer. Claim 35 further recites removing the substrate from a processing tool after depositing the third layer and photopatterning the first, second and third layers into a conductive line over a contact plug within the opening. The amendment to claim 35 is supported by the specification at, for example, page 8, lines 3-7 and Fig. 4.

Besser discloses formation of various metal comprising layers which can include elements such as titanium, aluminum or a mixture thereof. As acknowledged by the Examiner at page 4 of the present Action, Besser does not disclose or suggest an insulating layer having an opening extending through to a diffusion region, or formation of a first layer over a substrate having an insulative layer and an opening extending therethrough. Accordingly, Besser does not contribute toward suggesting the claim 35 recited formation of the first layer over the insulating layer and filling the opening. Additionally, Besser does not disclose or suggest the claim 35 recited forming a first layer, forming a second layer comprising an alloy of titanium and aluminum from the first layer, depositing a third layer and photopatterning the first, second and third layers into a conductive line over a contacting plug within the opening.

The Examiner indicates reliance upon the Colgan disclosure as suggesting photopatterning layers. Applicant notes however, that claim 35 distinctly recites photopatterning a first, second and third layer where the second layer comprises an alloy of titanium and aluminum from the first layer which is formed during depositing of titanium alloy on the first layer. Colgan on the other hand, indicates depositing a layer of titanium

followed by a layer of aluminum-copper, a layer of titanium and a subsequent layer of TiN (col. 2, ll. 62 through col. 3, ll. 2; and col. 5, ll. 15-33). Colgan indicates that this composite layer is patterned and is subsequently annealed to react the aluminum-copper to form $TiAl_3$. The Colgan disclosure of photopatterning and subsequent annealing to react titanium and aluminum does not contribute toward suggesting the claim 35 recites photopatterning of a first, second and third layer to form a conductive line where the second layer comprises an alloy of aluminum and titanium formed during depositing of titanium over a first layer. Further, Colgan does not contribute toward suggesting the claim 35 recited formation of a first layer comprising aluminum over an insulating layer and filling an opening which extends through the insulating layer.

The Examiner further indicates at page 8 of the present Action, that Example 1 of Shan discloses photopatterning of layers into a conductive line. However, the disclosure relied upon by the Examiner is a disclosure that an antireflective coating of TiW can be formed over multiple layers of aluminum to facilitate further processing by photolithography. This disclosure does not contribute toward suggesting the specifically recited photopatterning of a first, a second a third layer into a conductive line where the second layer comprises an alloy of titanium and aluminum from a first layer, the alloy being formed during depositing of titanium over a first layer which comprises aluminum or an aluminum alloy. Nor does the Shan disclosure contribute toward suggesting the recited conductive line having a first, second and third layer and a contacting plug within an opening formed by photopatterning.

As indicated at page 6 of the present Action, Marieb is relied upon as teaching heating a device having titanium over aluminum at a temperature of about 350-450°C to

accelerate formation of $TiAl_3$. However, the heating temperature disclosed by Marieb does not contribute toward suggesting the claim 35 recited photopatterning of a first, second and third layer to form a conductive line. As combined with Besser, Colgan and Shan, the heating temperature disclosed by Marieb does not contribute toward suggesting formation of a first, second and third layer where the first layer is formed over an insulating layer and filling an opening through the insulating layer, and where the second layer comprises an alloy of titanium and aluminum and photopatterning these layers into a conductive line over a contact plug within the opening. Accordingly, independent claim 35 is not rendered obvious by the combination of Besser, Colgan, Marieb and Shan and is allowable over these references.

Dependent claims 36-39, 41-48 and 75 are allowable over the cited combination of Marieb, Besser, Colgan and Shan for at least the reason that they depend from allowable base claim 35.

For the reasons discussed above, pending claims 35-39, 41-48 and 75 are allowable. Accordingly, applicant respectfully requests formal allowance of such pending claims in the Examiner's next action.

Respectfully submitted,

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